

WHAT IS CLAIMED IS:

1. A method for extending the survival of an organ transplant in a recipient, said method comprising:  
contacting cells of an organ transplant with a nucleic acid that modulates heme oxygenase-I activity in said cells, whereby the survival time of said organ transplant is extended.
2. The method according to Claim 1, wherein said nucleic acid molecule encodes a polypeptide having heme oxygenase-I activity.
3. The method according to Claim 2, wherein said nucleic acid has at least about 80% sequence identity to nucleotides 81-944 of the human heme oxygenase-I nucleic acid sequence shown in Figure 3 (SEQ ID NO:1).
4. The method according to Claim 2, wherein said nucleic acid comprises nucleotides 81-944 of the human heme oxygenase-I nucleic acid sequence shown in Figure 3 (SEQ ID NO:1).
5. The method according to Claim 1, wherein said contacting is *ex vivo*.
6. The method according to Claim 1, wherein said contacting is *in vivo*.
7. The method according to Claim 1, wherein said organ transplant is an allograft.
8. The method according to Claim 7, wherein said allograft is a heart.
9. The method according to Claim 1, wherein said contacting is with a liposome-mediated nucleic acid transfer vehicle.
10. The method according to Claim 1, wherein said contacting is with a viral-mediated nucleic acid transfer vehicle.

11. The method according to Claim 1, wherein said contacting is accomplished by direct injection of said nucleic acid into said organ.

12. The method according to Claim 1, wherein the heme oxygenase-I activity in said cells is increased.

5        13. A method for extending the survival of an organ transplant in a recipient, said method comprising:  
              contacting cells of said organ transplant with a nucleic acid encoding a polypeptide having heme oxygenase-I activity, wherein said nucleic acid molecule is expressed in said cells in an amount sufficient to increase heme oxygenase-I activity  
10        therein, whereby the survival time of said transplant is extended.

              14. The method according to Claim 13, wherein said nucleic acid molecule has at least about 80% sequence identity to nucleotides 81-944 of the human heme oxygenase-I nucleic acid sequence shown in Figure 3 (SEQ ID NO:1).

              15. The method according to Claim 13, wherein said nucleic acid molecule comprises nucleotides 81-944 of the human heme oxygenase-I nucleic acid sequence  
15        shown in Figure 3 (SEQ ID NO:1).

              16. The method according to Claim 13, wherein said contacting is *ex vivo*.

              17. The method according to Claim 13, wherein said contacting is *in vivo*.

20        18. The method according to Claim 13, wherein said organ transplant is an allograft.

              19. The method according to Claim 18, wherein said allograft is a heart.

              20. The method according to Claim 13, wherein said contacting is with a liposome-mediated nucleic acid transfer vehicle.

21. The method according to Claim 13, wherein said contacting is with a viral-mediated nucleic acid transfer vehicle.

22. The method according to Claim 13, wherein said contacting is accomplished by direct injection of said nucleic acid molecule into said organ.

5 23. A liposome comprising a nucleic acid encoding a heme oxygenase.

24. A viral vector comprising a nucleic acid encoding a heme oxygenase.

25. The viral vector of Claim 24, wherein said viral vector is an adenoviral vector.

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